



# Red Hat OpenShift Container Storage 4.7

## Updating OpenShift Container Storage

Instructions for cluster and storage administrators



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Instructions for cluster and storage administrators

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## Abstract

This document explains how to update Red Hat OpenShift Container Storage.

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## MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see [our CTO Chris Wright's message](#).

## PROVIDING FEEDBACK ON RED HAT DOCUMENTATION

We appreciate your input on our documentation. Do let us know how we can make it better. To give feedback:

- For simple comments on specific passages:
  1. Make sure you are viewing the documentation in the *Multi-page HTML* format. In addition, ensure you see the **Feedback** button in the upper right corner of the document.
  2. Use your mouse cursor to highlight the part of text that you want to comment on.
  3. Click the **Add Feedback** pop-up that appears below the highlighted text.
  4. Follow the displayed instructions.
- For submitting more complex feedback, create a Bugzilla ticket:
  1. Go to the [Bugzilla](#) website.
  2. As the Component, use **Documentation**.
  3. Fill in the **Description** field with your suggestion for improvement. Include a link to the relevant part(s) of documentation.
  4. Click **Submit Bug**.



# CHAPTER 1. OVERVIEW OF THE OPENSIFT CONTAINER STORAGE UPDATE PROCESS

You can upgrade Red Hat OpenShift Container Storage and its components, either between minor releases like 4.6 and 4.7, or between batch updates like 4.7.0 and 4.7.1.

You need to upgrade the different parts of OpenShift Container Storage in a specific order.

1. **Update OpenShift Container Platform** according to the [Updating clusters](#) documentation for OpenShift Container Platform.
2. **Update OpenShift Container Storage.**
  - a. **To prepare a disconnected environment for updates** see [Operators guide to using Operator Lifecycle Manager on restricted networks](#) to be able to update OpenShift Container Storage as well as Local Storage Operator when in use.
  - b. **Update the OpenShift Container Storage operator** using the appropriate process for your setup:
    - [Update OpenShift Container Storage in internal mode](#)
    - [Update OpenShift Container Storage in external mode](#)
  - c. **If you use local storage:**
    - i. **Update the Local Storage operator**  
See [Checking for Local Storage Operator deployments](#) if you are unsure.
    - ii. **Perform post-update configuration changes** for clusters backed by local storage.  
See [Post-update configuration for clusters backed by local storage](#) for details.

## Update considerations

Review the following important considerations before you begin.

- Red Hat recommends using the same version of Red Hat OpenShift Container Platform with Red Hat OpenShift Container Storage.  
See the [Interoperability Matrix](#) for more information about supported combinations of OpenShift Container Platform and OpenShift Container Storage.
- The Local Storage Operator is fully supported only when the Local Storage Operator version matches the Red Hat OpenShift Container Platform version.

## CHAPTER 2. OPENSIFT CONTAINER STORAGE UPGRADE CHANNELS AND RELEASES

In OpenShift Container Platform 4.1, Red Hat introduced the concept of channels for recommending the appropriate release versions for cluster upgrades. By controlling the pace of upgrades, these upgrade channels allow you to choose an upgrade strategy. As OpenShift Container Storage gets deployed as an Operator in OpenShift Container Platform, it follows the same strategy to control the pace of upgrades by shipping the fixes in multiple channels. Upgrade channels are tied to a minor version of OpenShift Container Storage. For example, OpenShift Container Storage 4.7 upgrade channels recommend upgrades from 4.6 to 4.7 and upgrades within 4.7. They do not recommend upgrades to 4.8 or later releases. This strategy ensures that administrators can explicitly decide to upgrade to the next minor version of OpenShift Container Storage.

Upgrade channels control only release selection and do not impact the version of the cluster that you install; the **ocs-operator** decides the version of OpenShift Container Storage to be installed. Out of the box, it always installs the latest OpenShift Container Storage release maintaining the compatibility with OpenShift Container Platform. So on OpenShift Container Platform 4.7, OpenShift Container Storage 4.7 will be the latest version which can be installed.

OpenShift Container Storage upgrades are tied to the OpenShift Container Platform upgrade to ensure that compatibility and interoperability are maintained with the OpenShift Container Platform. For OpenShift Container Storage 4.7, OpenShift Container Platform 4.7 and 4.8 are supported. OpenShift Container Platform 4.8 is supported to maintain forward compatibility with OpenShift Container Platform. Keep the OpenShift Container Storage version the same as OpenShift Container Platform in order to get the benefit of all the features and enhancements in that release.

OpenShift Container Platform 4.7 offers the following upgrade channel:

- **stable-4.7**

### **stable-4.7 channel**

Once a new version is Generally Available, the stable channel corresponding to the minor version gets updated with the new image which can be used to upgrade. You can use the stable-4.7 channel to upgrade from OpenShift Container storage 4.6 and upgrades within 4.7.

## CHAPTER 3. UPDATING OPENSIFT CONTAINER STORAGE IN INTERNAL MODE

Use the following procedures to update your OpenShift Container Storage cluster deployed in internal mode.

### 3.1. ENABLING AUTOMATIC UPDATES FOR OPENSIFT CONTAINER STORAGE OPERATOR IN INTERNAL MODE

Use this procedure to enable automatic update approval for updating OpenShift Container Storage operator in OpenShift Container Platform.

#### Prerequisites

- Under **Persistent Storage** in the **Status** card, confirm that the *OCS Cluster* and *Data Resiliency* has a green tick mark.
- Under **Object Service** in the **Status** card, confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick).
- Update the OpenShift Container Platform cluster to the latest stable release of version 4.7.Y, see [Updating Clusters](#).
- Switch the Red Hat OpenShift Container Storage channel from **stable-4.6** to **stable-4.7**. For details about channels, see [OpenShift Container Storage upgrade channels and releases](#).



#### NOTE

You are required to switch channels only when you are updating minor versions (for example, updating from 4.6 to 4.7) and not when updating between batch updates of 4.7 (for example, updating from 4.7.0 to 4.7.1).

- Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage namespace**.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.
- Ensure that you have sufficient time to complete the OpenShift Container Storage update process, as the update time varies depending on the number of OSDs that run in the cluster.

#### Procedure

1. Log in to OpenShift Web Console.
2. Click **Operators** → **Installed Operators**
3. Select the **openshift-storage** project.
4. Click the OpenShift Container Storage operator name.
5. Click the **Subscription** tab and click the link under **Approval**.
6. Select **Automatic (default)** and click **Save**.

7. Perform one of the following depending on the **Upgrade Status**:

- **Upgrade Status** *shows requires approval*.



#### NOTE

**Upgrade status** shows **requires approval** if the new OpenShift Container Storage version is already detected in the channel, and approval strategy was changed from **Manual** to **Automatic** at the time of update.

- Click on the **Install Plan** link.
  - On the **InstallPlan Details** page, click **Preview Install Plan**.
  - Review the install plan and click **Approve**.
  - Wait for the **Status** to change from **Unknown** to **Created**.
  - Click **Operators** → **Installed Operators**
  - Select the **openshift-storage** project.
  - Wait for the **Status** to change to **Up to date**
- **Upgrade Status** *does not show requires approval*:
    - Wait for the update to initiate. This may take up to 20 minutes.
    - Click **Operators** → **Installed Operators**
    - Select the **openshift-storage** project.
    - Wait for the **Status** to change to **Up to date**



#### NOTE

Multicloud Object Gateway outage is expected for a short period of time during upgrade due to migration of NooBaa DB from MongoDB to PostgreSQL.

#### Verification steps

- Click **Overview** → **Persistent Storage** tab and in the **Status** card confirm that the *OCS Cluster* and *Data Resiliency* has a green tick mark indicating it is healthy.
- Click **Overview** → **Object Service** tab and in the **Status** card confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick) indicating it is healthy.
- Click **Operators** → **Installed Operators** → **OpenShift Container Storage Operator**. Under **Storage Cluster**, verify that the cluster service status is **Ready**.



#### NOTE

Once updated from OpenShift Container Storage version 4.6 to 4.7, the **Version** field here will still display 4.6. This is because the **ocs-operator** does not update the string represented in this field.

4. Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage namespace**.  
To view the state of the pods, click **Workloads** → **Pods**. Select **openshift-storage** from the **Project** drop down list.
5. If verification steps fail, [contact Red Hat Support](#).

**NOTE**

The flexible scaling feature is available only in the new deployments of Red Hat OpenShift Container Storage 4.7. Storage clusters upgraded to the 4.7 version do not support flexible scaling.

**Next steps**

- [Adding annotation to the pre-existing backingstores](#)

**Additional Resources**

If you face any issues while updating OpenShift Container Storage, see the *Commonly required logs for troubleshooting* section in the [Troubleshooting guide](#).

## 3.2. MANUALLY UPDATING OPENSIFT CONTAINER STORAGE OPERATOR IN INTERNAL MODE

Use this procedure to update OpenShift Container Storage operator by providing manual approval to the install plan.

**Prerequisites**

- Under **Persistent Storage** in the **Status** card, confirm that the *OCS Cluster* and *Data Resiliency* has a green tick mark.
- Under **Object Service** in the **Status** card, confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick).
- Update the OpenShift Container Platform cluster to the latest stable release of version 4.7.Y, see [Updating Clusters](#).
- Switch the Red Hat OpenShift Container Storage channel from **stable-4.6** to **stable-4.7**. For details about channels, see [OpenShift Container Storage upgrade channels and releases](#).

**NOTE**

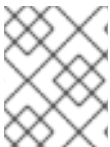
You are required to switch channels only when you are updating minor versions (for example, updating from 4.6 to 4.7) and not when updating between batch updates of 4.7 (for example, updating from 4.7.0 to 4.7.1).

- Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage namespace**.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.

- Ensure that you have sufficient time to complete the OpenShift Container Storage update process, as the update time varies depending on the number of OSDs that run in the cluster.

## Procedure

1. Log in to OpenShift Web Console.
2. Click **Operators** → **Installed Operators**
3. Select the **openshift-storage** project.
4. Click the **OpenShift Container Storage** operator name.
5. Click the **Subscription** tab and click the link under **Approval**.
6. Select **Manual** and click **Save**.
7. Wait for the **Upgrade Status** to change to **Upgrading**.
8. If the **Upgrade Status** shows **requires approval**, click on **requires approval**.
9. On the **InstallPlan Details** page, click **Preview Install Plan**.
10. Review the install plan and click **Approve**.
11. Wait for the **Status** to change from **Unknown** to **Created**.
12. Click **Operators** → **Installed Operators**
13. Select the **openshift-storage** project.
14. Wait for the **Status** to change to **Up to date**

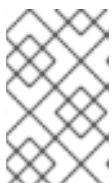


### NOTE

Multicloud Object Gateway outage is expected for a short period of time during upgrade due to migration of NooBaa DB from MongoDB to PostgreSQL.

## Verification steps

1. Click **Overview** → **Persistent Storage** tab and in the **Status** card confirm that the *OCS Cluster* and *Data Resiliency* has a green tick mark indicating it is healthy.
2. Click **Overview** → **Object Service** tab and in the **Status** card confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick) indicating it is healthy.
3. Click **Operators** → **Installed Operators** → **OpenShift Container Storage Operator**. Under **Storage Cluster**, verify that the cluster service status is **Ready**.



### NOTE

Once updated from OpenShift Container Storage version 4.6 to 4.7, the **Version** field here will still display 4.6. This is because the **ocs-operator** does not update the string represented in this field.

4. Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage namespace**.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.
5. If verification steps fail, [contact Red Hat Support](#).

### Next steps

- [Adding annotation to the pre-existing backingstores](#)

### Additional Resources

If you face any issues while updating OpenShift Container Storage, see the *Commonly required logs for troubleshooting* section in the [Troubleshooting guide](#).

## CHAPTER 4. UPDATING OPENSIFT CONTAINER STORAGE IN EXTERNAL MODE

Use the following procedures to update your OpenShift Container Storage cluster deployed in external mode.



### IMPORTANT

Upgrading Red Hat OpenShift Container Storage Operator does not upgrade the external Red Hat Ceph Storage cluster. It only upgrades the Red Hat OpenShift Container Storage Services running on the OpenShift Container Platform.

To upgrade the external Red Hat Ceph Storage cluster contact your Red Hat Ceph Storage administrator.

### 4.1. ENABLING AUTOMATIC UPDATES FOR OPENSIFT CONTAINER STORAGE OPERATOR IN EXTERNAL MODE

Use this procedure to enable automatic update approval for updating OpenShift Container Storage operator in OpenShift Container Platform.



### NOTE

Updating OpenShift Container Storage will not update the external Red Hat Ceph Storage cluster.

#### Prerequisites

- Red Hat Ceph Storage version 4.2z1 or later is required for the external cluster. For more information, see this [knowledge base article on Red Hat Ceph Storage releases and corresponding Ceph package versions](#).
- Update the OpenShift Container Platform cluster to the latest stable release of version 4.7.y, see [Updating Clusters](#).
- Switch the Red Hat OpenShift Container Storage channel from **stable-4.6** to **stable-4.7**. For details about channels, see [OpenShift Container Storage upgrade channels and releases](#).



### NOTE

You are required to switch channels only when you are updating minor versions (for example, updating from 4.6 to 4.7) and not when updating between batch updates of 4.7 (for example, updating from 4.7.0 to 4.7.1).

- Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage namespace**.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.
- Under **Persistent Storage** in the **Status** card, confirm that the *OCS Cluster* has a green tick mark.



- Under **Object Service** in the **Status** card, confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick).
- Ensure that you have sufficient time to complete the Openshift Container Storage update process.

## Procedure

1. Log in to OpenShift Web Console.
2. Click **Operators** → **Installed Operators**
3. Select the **openshift-storage** project.
4. Click on the OpenShift Container Storage operator name.
5. Click the **Subscription** tab and click the link under **Approval**.
6. Select **Automatic (default)** and click **Save**.
7. Perform one of the following depending on the **Upgrade Status**:
  - Upgrade Status *shows requires approval*.



### NOTE

**Upgrade status shows requires approval** if the new OpenShift Container Storage version is already detected in the channel, and approval strategy was changed from **Manual** to **Automatic** at the time of update.

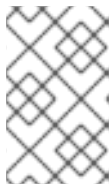
- a. Click the **Install Plan** link.
  - b. On the **InstallPlan Details** page, click **Preview Install Plan**.
  - c. Review the install plan and click **Approve**.
  - d. Wait for the **Status** to change from **Unknown** to **Created**.
  - e. Click **Operators** → **Installed Operators**
  - f. Select the **openshift-storage** project.
  - g. Wait for the **Status** to change to **Up to date**
- Upgrade Status *does not show requires approval*:
    - a. Wait for the update to initiate. This may take up to 20 minutes.
    - b. Click **Operators** → **Installed Operators**
    - c. Select the **openshift-storage** project.
    - d. Wait for the **Status** to change to **Up to date**

**NOTE**

Multicloud Object Gateway outage is expected for a short period of time during upgrade due to migration of NooBaa DB from MongoDB to PostgreSQL.

**Verification steps**

1. Click **Overview** → **Persistent Storage** tab and in the **Status** card confirm that the *OCS Cluster* has a green tick mark indicating it is healthy.
2. Click **Overview** → **Object Service** tab and in the **Status** card confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick) indicating it is healthy.
3. Click **Operators** → **Installed Operators** → **OpenShift Container Storage Operator**. Under **Storage Cluster**, verify that the cluster service status is in **Ready**.

**NOTE**

Once updated from OpenShift Container Storage version 4.6 to 4.7, the **Version** field here will still display 4.6. This is because the **ocs-operator** does not update the string represented in this field.

4. Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage** namespace.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.
5. If verification steps fail, [contact Red Hat Support](#).

**Next steps**

- [Adding annotation to the pre-existing backingstores](#)

**Additional Resources**

If you face any issues while updating OpenShift Container Storage, see the *Commonly required logs for troubleshooting* section in the [Troubleshooting guide](#).

## 4.2. MANUALLY UPDATING OPENSIFT CONTAINER STORAGE OPERATOR IN EXTERNAL MODE

Use this procedure to update OpenShift Container Storage operator by providing manual approval to the install plan.

**NOTE**

Updating OpenShift Container Storage will not update the external Red Hat Ceph Storage cluster.

**Prerequisites**

- Red Hat Ceph Storage version 4.2z1 or later is required for the external cluster. For more information, see this [knowledge base article on Red Hat Ceph Storage releases and corresponding Ceph package versions](#).

- Update the OpenShift Container Platform cluster to the latest stable release of version 4.7.Y, see [Updating Clusters](#).
- Switch the Red Hat OpenShift Container Storage channel from **stable-4.6** to **stable-4.7**. For details about channels, see [OpenShift Container Storage upgrade channels and releases](#).



#### NOTE

You are required to switch channels only when you are updating minor versions (for example, updating from 4.6 to 4.7) and not when updating between batch updates of 4.7 (for example, updating from 4.7.0 to 4.7.1).

- Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage** namespace.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.
- Under **Persistent Storage** in the **Status** card, confirm that the *OCS Cluster* has a green tick mark.
- Under **Object Service** in the **Status** card, confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick).
- Ensure that you have sufficient time to complete the OpenShift Container Storage update process.

#### Procedure

1. Log in to OpenShift Web Console.
2. Click **Operators** → **Installed Operators**
3. Select the **openshift-storage** project.
4. Click the **OpenShift Container Storage** operator name.
5. Click **Subscription** tab and click the link under **Approval**.
6. Select **Manual** and click **Save**.
7. Wait for the **Upgrade Status** to change to **Upgrading**.
8. If the **Upgrade Status** shows **requires approval**, click on **requires approval**.
9. On the **InstallPlan Details** page, click **Preview Install Plan**.
10. Review the install plan and click **Approve**.
11. Wait for the **Status** to change from **Unknown** to **Created**.
12. Click **Operators** → **Installed Operators**
13. Select the **openshift-storage** project.
14. Wait for the **Status** to change to **Up to date**

**NOTE**

Multicloud Object Gateway outage is expected for a short period of time during upgrade due to migration of NooBaa DB from MongoDB to PostgreSQL.

**Verification steps**

1. Click **Overview** → **Persistent Storage** tab and in the **Status** card confirm that the *OCS Cluster* has a green tick mark indicating it is healthy.
2. Click **Overview** → **Object Service** tab and in the **Status** card confirm that both the *Object Service* and *Data Resiliency* are in **Ready** state (green tick) indicating it is healthy.
3. Click **Operators** → **Installed Operators** → **OpenShift Container Storage Operator**. Under **Storage Cluster**, verify that the cluster service status in **Ready**.
4. Ensure that all OpenShift Container Storage Pods, including the operator pods, are in **Running** state in the **openshift-storage** namespace.  
To view the state of the pods, click **Workloads** → **Pods** from the left pane of the OpenShift Web Console. Select **openshift-storage** from the **Project** drop down list.

**NOTE**

Once updated from OpenShift Container Storage version 4.6 to 4.7, the **Version** field here will still display 4.6. This is because the **ocs-operator** does not update the string represented in this field.

5. If verification steps fail, [contact Red Hat Support](#).

**Next steps**

- [Adding annotation to the pre-existing backingstores](#)

**Additional Resources**

If you face any issues while updating OpenShift Container Storage, see the *Commonly required logs for troubleshooting* section in the [Troubleshooting guide](#).

## CHAPTER 5. ADDING ANNOTATION TO THE PRE-EXISTING BACKINGSTORES

Adding the correct annotation to the pre-existing backingstores allows the backingstores backed by object gateways (RGWs) to report its actual and free size. The Multicloud Object Gateway (MCG) can retrieve and use this information.

### Procedure

1. Log in to the OpenShift Container Platform Web Console.
2. Click **Home** → **Search**.
3. Search for **BackingStore** in **Resources** and click on it.
4. Beside the **S3-compatible BackingStore**, click **Action Menu ( ⋮ )** → **Edit annotations**
5. Add **rgw** for **KEY**.
6. Click **Save**.

### Next steps

For clusters backed by local storage, additional configuration steps are required after an update to ensure that all features work as expected.

For more information, see [Post-update configuration changes for clusters backed by local storage](#) .

## CHAPTER 6. POST-UPDATE CONFIGURATION CHANGES FOR CLUSTERS BACKED BY LOCAL STORAGE

In clusters backed by local storage, additional configuration steps are required after an update to ensure that all features work as expected. In Red Hat OpenShift Container Platform 4.6 and onward, the Local Storage Operator provides new custom resource types for managing local storage:

- **LocalVolumeDiscovery**
- **LocalVolumeSet**

These resource types are not automatically handled as part of an update from earlier versions and must be created manually.



### NOTE

If you had already created these resources after upgrading from 4.5 to 4.6, then you do not need to create them after upgrading from 4.6 to 4.7.

### 6.1. CREATING A LOCALVOLUMEDISCOVERY CUSTOM RESOURCE USING THE COMMAND LINE

Create a **LocalVolumeDiscovery** custom resource to ensure that the device management user interface can discover the state of local devices and provide information about devices that are available on cluster nodes.

#### Prerequisites

- Administrative access to the OpenShift Container Platform cluster.

#### Procedure

1. Identify the namespace where OpenShift local storage operator is installed and assign it to **local\_storage\_project** variable:

```
$ local_storage_project=$(oc get csv --all-namespaces | awk '{print $1}' | grep local)
```

For example:

```
$ local_storage_project=$(oc get csv --all-namespaces | awk '{print $1}' | grep local)
echo $local_storage_project
openshift-local-storage
```

2. Change into the project that has the Local Storage Operator installed.

```
$ oc project $local_storage_project
```

3. Define the **LocalVolumeDiscovery** custom resource.  
For example, define the following in a **local-volume-discovery.yaml** file.

```
apiVersion: local.storage.openshift.io/v1alpha1
kind: LocalVolumeDiscovery
```

```

metadata:
  name: auto-discover-devices
spec:
  nodeSelector:
    nodeSelectorTerms:
      - matchExpressions:
          - key: kubernetes.io/hostname
            operator: In
            values:
              - worker1.example.com
              - worker2.example.com
              - worker3.example.com

```

4. Create the **LocalVolumeDiscovery** custom resource.

```
$ oc create -f local-volume-discovery.yaml
```

### Verification steps

1. Log in to the OpenShift web console.
2. Click **Compute** → **Node** and click on the name of the node.
3. Click the **Disks** tab and check that you can see the devices available on that node.

## 6.2. CREATING A LOCALVOLUMESET CUSTOM RESOURCE USING THE COMMAND LINE

Create a **LocalVolumeSet** custom resource to automatically provision certain storage devices as persistent volumes based on criteria that you specify. Persistent volumes are created for any devices that match the **deviceInclusionSpec** criteria on any node that matches the **nodeSelector** criteria.

### Prerequisites

- Administrative access to the OpenShift Container Platform cluster.

### Procedure

1. Define a **LocalVolumeSet** custom resource in a **local-volume-set.yaml** file.

```

apiVersion: local.storage.openshift.io/v1alpha1
kind: LocalVolumeSet
metadata:
  name: localblock
spec:
  nodeSelector:
    nodeSelectorTerms:
      - matchExpressions:
          - key: kubernetes.io/hostname
            operator: In
            values:
              - worker1.example.com
              - worker2.example.com
              - worker3.example.com

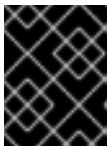
```

```

storageClassName: localblock
volumeMode: Block
maxDeviceCount: 10 # optional, limit devices provisioned per node
deviceInclusionSpec:
  deviceTypes: # list of types to allow
    - disk
    - part # omit this to use only whole devices
  deviceMechanicalProperty:
    - NonRotational
  minSize: 100Gi # optional, minimum size of device to allow
  maxSize: 100Ti # optional, maximum size of device to allow
  models: # (optional) list of models to allow
    - SAMSUNG
    - Crucial_CT525MX3
  vendors: # (optional) list of device vendors to allow
    - ATA
    - ST2000LM

```

The above definition selects whole disks or partitions on specific models of non-rotational devices that are between 100 GB and 100 TB in size, provided by specific vendors, from the **worker1**, **worker2** and **worker3** nodes. The **localblock** storage class is created and persistent volumes are provisioned from discovered devices.



### IMPORTANT

Select an appropriate value for **minSize** to ensure system partitions are not selected.

2. Create the **LocalVolumeSet**.

```
$ oc create -f local-volume-set.yaml
```

### Verification steps

1. Use the following command to track provisioning of persistent volumes for devices that match the **deviceInclusionSpec**. It can take a few minutes to provision persistent volumes.

```

$ oc describe localvolumeset localblock
[...]
Status:
  Conditions:
    Last Transition Time:      2020-11-17T05:03:32Z
    Message:                  DiskMaker: Available, LocalProvisioner: Available
    Status:                   True
    Type:                     DaemonSetsAvailable
    Last Transition Time:      2020-11-17T05:03:34Z
    Message:                  Operator reconciled successfully.
    Status:                   True
    Type:                     Available
  Observed Generation:       1
  Total Provisioned Device Count: 4
Events:
Type Reason Age From Message
----

```



```

Normal Discovered 2m30s (x4 localvolumeset- ip-10-0-147-124.us-east-
NewDevice over 2m30s) symlink-controller 2.compute.internal -
found possible matching
disk, waiting 1m to claim
Normal FoundMatch 89s (x4 localvolumeset- ip-10-0-147-124.us-east-
ingDisk over 89s) symlink-controller 2.compute.internal -
symlinking matching disk

```

2. Verify the state of the provisioned persistent volumes.

```

$ oc get pv
      ACCESS RECLAIM      STORAGE
NAME     CAPACITY MODES  POLICY STATUS  CLASS  AGE
local-pv- 500Gi  RWO   Delete Available localblock 7m48s
3584969f
local-pv- 500Gi  RWO   Delete Available localblock 7m48s
3aee84fa
local-pv- 500Gi  RWO   Delete Available localblock 7m48s
644d09ac
local-pv- 500Gi  RWO   Delete Available localblock 7m48s
c73cee1

```

## 6.3. ADDING ANNOTATIONS

Use this procedure to add annotations to storage cluster to enable replacing of failed storage devices through the user interface when you upgraded to OpenShift Container Storage 4.7 from a previous version.

### Procedure

1. Log in to OpenShift Container Platform Web Console.
2. Click **Home** → **Search**.
3. Search for **StorageCluster** in **Resources** and click on it.
4. Beside **ocs-storagecluster**, click Action menu ( **:** ) → **Edit annotations**.
5. Add **cluster.ocs.openshift.io/local-devices** and **true** for **KEY** and **VALUE** respectively.
6. Click **Save**.